

**The Impact of Urban Agriculture on Livelihoods, Food and Nutrition Security  
in Greater Accra**

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## **Introduction**

On January 28, 1997, an agreement between the International Development Research Centre (IDRC) and Noguchi Memorial Institute for Medical Research (NMIMR) was signed for this research project, Centre File Number 003149, and given the Centre Title AUrban Agriculture: Food Security and Nutritional Status in Greater Accra (Ghana).@ This study was a sub-component of a larger study of urban livelihoods, food security, and nutritional status under urban conditionsC the Accra Urban Food and Nutrition Study (AUFNS), carried out jointly by the Noguchi Memorial Institute for Medical Research and the International Food Policy Research Institute, with funding from the World Health Organization, the Rockefeller Foundation, the International Development Research Centre, and the Canadian International Development Agency.

The inclusion of urban agriculture was identified as an important component of the study by a stake-holder's meeting held in 1996 and further detailed planning was conducted at a second meeting held in 1997, after funding had been secured. This study coincided with a number of other studies or efforts in Greater Accra all of which raise, but do not directly address, the issue

of urban and peri-urban agriculture. While the NMIMR study is focused primarily at the community, household and individual level, the Food and Agriculture Organization undertook a study on the food supply and distribution system of the city (Argenti, 1996), which ultimately suggested further investigation and investment in urban agriculture. The World Bank has recently completed an extended poverty study, which included a participatory assessment of urban poverty in Accra (Norton et al., 1995). While not dealing in any way with urban agriculture, that study, and several others accompanying it, noted with alarm the rate at which the level of urban poverty in Accra is growing. The Canadian International Development Agency followed up with an assessment of poverty in Accra, including proposals for possible intervention (Bortei-Doku Aryeetey and Aryeetey). A University of Ghana/Stockholm Environment Institute team has been working on an environmental assessment of the city for several years, and has noted important links between a deteriorating urban environment and deteriorating human health situation in Accra (Benneh et al., 1993). The changing nature of property rights and its impact on land use in the immediate peri-urban fringe of the city has been under study for some period by a team from the Land Tenure Center and the University of Science and Technology (Roth et al., 1995), noting the emergence of a robust market in land rights, but with unintended consequences for the land–selling groups.

The AUFNS study had the objectives of identifying vulnerable groups within the Greater Accra area, understanding the causes of vulnerability to food and livelihood insecurity and malnutrition, suggesting improved policies or programmatic interventions to reduce vulnerability, and developing qualitative and quantitative indicators to monitor a variety of

outcomes in the urban and peri-urban area.

With these objectives in mind, the suggestion of a component to investigate urban agriculture coalesced around the following research questions :

- I) What is the geographic, demographic, and socio-economic distribution of urban agriculture in Greater Accra?
- ii) What is the impact of urban agriculture on food and livelihood security and nutritional status at the household and individual level?
- iii) What are the impacts of urban agriculture on the environment and vice versa?
- iv) Given production conditions, what are the impacts of urban agriculture on health?
- v) How is the rapid growth of the city changing land use, property rights, and livelihoods on the peri-urban fringe?

This paper is in two parts. The first part rapidly summarizes the major findings of the urban agriculture component of the overall study, as they relate to the research questions stated. The second part is a brief self-assessment by the two co-principal investigators of the lessons learned during the study that can be usefully extrapolated to other studies and or interventions into urban agriculture. An appendix summarizes the findings of the overall AUFNS report.

## **Part 1: Summary of Major Findings**

*1. Distribution of Urban Agriculture.* Out of a sample of 559 households in sixteen enumeration areas in the household survey of the Accra Urban Food and Nutrition Study of 1997, a total of 88 reported a member engaging in some form of agriculture, and eleven reported fishing as a livelihood. Of those engaged in agriculture (including livestock keeping), 12 farmed in their home villages, which were well outside the city, and therefore outside the study area. That left 76 households, or some 13.6% of the total sample, engaged in agriculture in the immediate urban or peri-urban area.<sup>1</sup> Of these, 19 were engaged in crop production, 49 in livestock production, and 8 in both.

Food crops were the major agricultural activity. Among livestock keepers, poultry was the most common. Seven different categories of farming systems emerged from an analysis of the urban agriculture found within the city of Accra. Each of the seven was then investigated in detail through a series of case studies with individual farmers or farming households. The seven systems are described in detail by Zakariah, Lamptey and Maxwell (1998). Very briefly they are:

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<sup>1</sup>In terms of location, urban or peri-urban meant that the respondent lived in one of the enumeration areas, and could reach the location of their farm, carry out their farming activity, and return home the same day. There were two separate enterprises in two households, so when the analysis is presented in terms of enterprises, the total comes to 78, when the analysis is at the household level, the total is 76.

*Seasonal crop farming:* rainfed, seasonal agriculture, relying on informal land access, with most produce for home consumption.

*Customary land rights systems:* rainfed agriculture with some dry-season irrigation, on La stool land between Labadi and Teshie, by La residents for both market and home consumption.

*Vegetable growing systems:* irrigated, market oriented production of vegetables, relying on informal land access, usually along main drains and streams in Accra.

*Small ruminants and poultry:* raising small livestock in densely populated areas, sometimes with a market orientation, but more frequently as an investment or asset strategy.

*Backyard gardening:* small-scale gardening on own land or rented compound, usually for home consumption.

*Commercial livestock:* usually poultry, with a few examples of pigs, raised on medium to large scale for sale to urban market.

*Miscellaneous:* export crop production, micro-livestock, snail farming, bee-keeping, large ruminants, etc.

Table 1 presents data on the frequency of farming, livestock keeping and fishing by enumeration area for the entire survey sample. These activities are heavily concentrated in the two least populated enumeration areas, which are both adjacent to open spaces. Several findings stand out: While urban agriculture is predominantly a women=s activity in many Sub-Saharan African cities, over 60% of those actively engaged in agriculture in Accra are men, and most of the women engage in keeping small livestock. There are significant differences between men and

women in terms of levels of education. The female heads of household, in particular, have a very low level of education-- only 2.1 years. Farming is fairly evenly spread across income groups, particularly the keeping of small livestock. In most cases, farming was a secondary or tertiary economic activity at the individual and household level. Only among vegetable growers and peri-urban farmers was farming the main activity. Much of the farming activity in the city is on land that the individual or household owns, but with informal access to land also an important category. Farming is done primarily for three sets of reasons. The first is for a cash income (particularly the vegetable growers and commercial livestock group); the second is for

ing in Crop Production, Livestock-Keeping or Fishing in Accra  
By Enumeration Area

| EA No. | EA Name         | EA Category | Crop Production | Livestock Production | Urban Agriculture | Total HH=s in E.A. | Percentage in Urban Agriculture | Farm Far Away | Fishing |
|--------|-----------------|-------------|-----------------|----------------------|-------------------|--------------------|---------------------------------|---------------|---------|
| 01     | Pokoase         | LI/LD/(Mix) | 15              | 12                   | 20                | 38                 | 52.5%                           | 0             | 0       |
| 02     | Dansoman        | HI/MD/(M)   | 1               | 4                    | 5                 | 32                 | 15.6%                           | 0             | 0       |
| 03     | Korle-Gonno     | LI/MD(I)    | 0               | 3                    | 3                 | 34                 | 8.8%                            | 0             | 1       |
| 04     | Lartebiokorshie | MI/HD(Mix)  | 0               | 5                    | 5                 | 37                 | 13.5%                           | 1             | 0       |
| 05     | Odorkor         | LI/HD(Mix)  | 2               | 1                    | 3                 | 35                 | 8.6%                            | 0             | 0       |
| 06     | Bubiashie       | LI/MD(Mix)  | 1               | 3                    | 4                 | 34                 | 11.8%                           | 0             | 0       |
| 07     | Jamestown       | LI/HD(I)    | 0               | 1                    | 1                 | 35                 | 2.8%                            | 1             | 0       |
| 08     | Osu             | LI/HD(I)    | 0               | 0                    | 0                 | 38                 | 0.0%                            | 0             | 0       |
| 09     | Adabraka        | MI/HD(Mix)  | 0               | 2                    | 2                 | 33                 | 6.0%                            | 1             | 0       |
| 10     | Teshie          | LI/HD(I)    | 0               | 2                    | 2                 | 34                 | 5.8%                            | 0             | 1       |
| 11     | Labadi          | LI/HD(I)    | 1               | 2                    | 3                 | 37                 | 8.1%                            | 4             | 0       |
| 12     | Nima            | LI/HD(M)    | 1               | 0                    | 1                 | 36                 | 2.7%                            | 3             | 1       |
| 13     | Accra New Town  | LI/HD(M)    | 0               | 3                    | 3                 | 33                 | 9.1%                            | 1             | 0       |
| 14     | Maamobi         | LI/HD(M)    | 2               | 1                    | 3                 | 34                 | 8.8%                            | 1             | 0       |
| 15     | Tema New Town   | LI/MD(M)    | 2               | 17                   | 18                | 37                 | 48.6%                           | 0             | 8       |
| 16     | Ashaiman        | LI/HD(M)    | 2               | 1                    | 3                 | 32                 | 9.4%                            | 0             | 0       |
| TOTAL  |                 |             | 27              | 57                   | 76                | 559                | 13.6%                           | 12            | 11      |

**Key:** HI = High Income      LD = Low Density      (I) = Primarily Indigenous Population  
MI = Middle Income      MD = Medium Density      (M) = Primarily Migrant Population  
LI = Low Income      HD = High Density      (Mix) = Mixed Indigenous/Migrant Population

Thus: HI/LD(M) = High Income, Low Density, Migrant Population, etc.

subsistence food (the seasonal farmer group, the customary land rights group, and back yard gardeners); the third is to have some assets that can



be readily liquidated in case of an emergency need for cash (especially the small ruminants and poultry group).

2. Impact on Food and Nutrition Security. In several African cities, urban agriculture has been shown to have a significant, positive association with improved food security and nutritional status. In Accra, there was little evidence of this at the level of the entire sample surveyed. Food availability at the household level was measured by source of acquisition for the week prior to the survey. Overall only about 1 percent of the food at the household level comes from direct production in urban agriculture. Among farming households, the total (in both value terms and calorie terms) was about 7.5 percent of the total food available. Cash income from urban agriculture varies from as little as \$20-30 per year up to as much as several hundred dollars per month. However, the number of people involved in the more lucrative forms of urban agriculture is small. Overall, the impact of urban agriculture on household food security is relatively small, although specific impacts were noted from case studies in terms of direct access to food. Particularly among the seasonal farming and customary land rights farming groups, enough staple (usually maize) can be harvested to provide as much as two thirds of the households' annual needs. For the survey sample, however, there was no positive association of urban farming with child nutritional status in either bi-variate or multi-variate analysis; in fact, farming households had a higher prevalence of stunting among children under five years of age than did non-farming households. There is no clear indication that farming was the cause of this difference, however.

Several reasons can be suggested for the limited impact of urban agriculture on household food security and nutritional status in Accra. First, the number of households engaged in

urban agriculture are relatively few, compared with other African cities. Second, even among the households that do engage in some form of agriculture or livestock keeping, it is often in the form of an Assets strategy,<sup>@</sup> particularly the keeping of small livestock. Small livestock provide a source of storing assets, which can provide cash through sales in an emergency, or source of food for consumption at special times, it is not surprising that this kind of strategy has relatively little impact on consumption or nutritional status. Third, the timing of data collection was not the time that cash income or consumption from agriculture would have been at its peak, although the time of data collection was selected to represent a time of year when the impact of seasonality would be average for the year. Lastly, unlike in many other African cities, most of the agriculture carried out in Accra is done by men. While some of the produce is consumed within the household, income from urban agriculture is less distinguishable from other forms of male income, in terms of the impact on food and nutrition security.

3. Environmental Impacts. An environmental assessment was prepared as part of the study (Anku, Doe and Tetteh, 1998). Among beneficial impacts of urban agriculture, they note the potential to recycle urban waste productsC in fact a waste processing plant has been set up in Accra for this very purpose, but to date the output is small, and the cost of the compost is sufficiently high that many farmers do not want to use it. Also, there is fear that the trash has not been sorted properly and there would be the danger of polluting the soil if the compost were used on land for vegetable production. They also note that urban agriculture produces a good supply of vegetables for the urban market, without incurring the cost, congestion, and pollution of long-distance transport to bring the perishable vegetables to the city from up-

country.

Among adverse impacts, they note the improper use of agricultural chemicals in the densely populated area, creating run-off hazards and the potential poisoning of the water-ways in the city. Many of these are already contaminated with industrial and human waste, so urban agriculture is not the only potential offender, but agro-chemicals are a special cause of concern, given their potency and the fact that many users are unaware of the potentially harmful impact they could have. They also note run-off from livestock keeping, the use of wetlands and other environmentally sensitive areas. A last point they make is the potentially harmful impact of growing vegetables in the urban environment on human healthC both through irrigation with water contaminated with human waste, and through the potential plant uptake of industrial pollutants in the soil, water, or air. The issue of using water for irrigation that is contaminated with human waste is taken up in the next section of this paper.

Anku, Doe and Tetteh (1998) note a variety of actors at the policy and programmatic levels who should be in position to follow up on both educational outreach, and policy implementation, in order to protect the urban environment from potentially harmful effects of farming and livestock keeping in a densely populated area, and to promote the recycling of urban waste products in Accra.

4. Contamination of Food for Human Consumption. Vegetables are grown along the banks of Accra=s streams and along the drains that carry much of the waste water of the city. There is little question that this water is polluted, with both industrial waste and human waste. For lack of an alternative, vegetable producers use this water to irrigate their crops. For this

reason, city health authorities fear that vegetables produced in the city are a risk to public health, and have banned the practice of irrigated vegetable production under such circumstances. However, the by-laws are virtually never enforced. The farmers, on the other hand, blame the city for not controlling the levels of pollution in public waterways in the first place, and say they are being victimized for a problem that is not of their making.

In terms of policy, the desired objective is to prevent the contamination of food for human consumption, and the question to be addressed therefore is the sources of contamination, and where contamination can best be controlled. If contamination is occurring mainly in the production process, then the city policy of banning the use of drain water for irrigation would make sense. If, however, food from other production sources were also contaminated with human waste by the time it reached the consumer, then the effort to control food contamination should be made much more at the level of the consumer, and it would not make sense to penalize producers.

To check for sources of contamination, samples of vegetables grown under irrigation using water from drains in the city were compared with vegetables grown with tap water, and vegetables purchased in the major markets, where neither the location of production (urban or rural) nor the conditions of production (irrigated or rain-fed) could be ascertained. The preliminary results of the comparative analysis suggest that, as expected, lettuce samples obtained at the farm gate, grown under irrigation with tap water have significantly lower bacteria counts than do lettuce samples bought at the farm gate grown under irrigation with drain water. However, both the farm-gate samples have significantly lower counts of all categories of bacteria than do samples purchased in the major wholesale markets.

The implication of these laboratory results is that, while food contamination is a serious concern, the major sources of contamination appear to be in the marketing, handling and distribution system, not in the production system. Given that some level of contamination can take place in both production and distribution, the implied intervention to prevent the spread of gastro-intestinal infection is better education about food hygiene at the level of the consumer household.

5. The Impact of Urbanization on Peri-Urban Land Rights and Livelihoods. Contending perspectives have interpreted the impact of rapid growth in peri-urban areas in very different ways. One school of thought characterizes peri-urban growth as leading to the development of new markets, and the conversion of property rights in such a way as to transform the local economy, leading to greater entrepreneurialism. Another sees the destruction of agricultural livelihoods without necessarily replacing them with any alternative form of economic activity.

While the relative numbers of households within the city itself that are engaged in urban agriculture are fairly low, agriculture continues to be the backbone of the economy in the peri-urban areas in the immediate hinter land. However, Accra is sprawling outwards at a very rapid rate, spurred primarily by a booming demand for housing that is often only for the wealthiest strata of society. Maxwell and Larbi et al. (1998) review the research that traces the conversion of land from customary to lease-hold tenure in the Greater Accra area, and then compare four cases within the peri-urban periphery of Greater Accra to assess the impact of rapid urban sprawl on the area immediately surrounding the city. Cases examined include

the loss of land to housing, the protection of agricultural land from urban sprawl, environmental degradation as a result of urbanization, and the commercialization of peri-urban agricultural production as a result of changing market demand.

The rate of land-use conversion from agriculture to housing is in the range of 2,600 hectares per year in the peri-urban periphery of Accra, and the rate of population growth in some of the communities to the North and West of Accra is on the order of 10% per year. This places enormous strains on subsistence agriculture as the primary livelihood of the indigenous (and in some cases, migrant stranger) populations living in the area. Demand for sand and top soil for construction and landscaping in the booming housing industry is putting further strains on peri-urban agriculture, as sand contractors dug up huge swathes of land, and then are not forced to do any land reclamation. Both of these factors are contributing to emergent landlessness in Ga District in particular. Yet the District authorities, on their own, are relatively powerless to control the practice since it is a national Ministry (Mines and Energy) that licenses the operations, and it is individual chiefs that enter into the deals with the sand contractors.

Some village leaders have taken the initiative to preserve some land in agriculture in perpetuity, although the cases of this are few. In areas that are somewhat farther away from the city, and in slightly higher potential areas, the proximity to the city and especially to the international airport have led to an agricultural export boom. The main crop grown for export is pineapples, but other cash crops are also exported. This proximity to the city and to international markets has increased the incomes of people and raised general community welfare without, at least so far, causing any landlessness in these communities. However, the

positive stories from the peri-urban periphery are relatively few, and the negative stories of widespread loss of livelihood are many. Specific policies are required to control the rapid sprawl of housing, and ensuring that some of the proceeds from land sales are re-invested in the community in other ways, so that people are able to make the transition from a rural, agricultural livelihood to a more urbanized, wage labor or self-employed livelihood without experiencing impoverishment as an immediate result.

## **Part II: Self Reporting on Lessons Learned**

The IDRC contract called for specific attention to several areas, which do not fall in the technical report, so are briefly discussed here. These include human resource development by the project, institutional capacity strengthening, the effectiveness of local partnerships, gender sensitive analysis, the value added of a multi-disciplinary approach, scientific advances and utilization of results by other institutions, and leverage of non-Centre funds. These are reported on below. It is not always possible to state which of these result from the overall Accra Urban Food and Nutrition Study, and which are strictly the result of the IDRC grant for the urban agriculture, which was one component of the overall Accra Urban Food and Nutrition Study. All are reported on here.

1. Human resource development. Two research assistants, who are included as authors of several of the papers in this report, underwent significant training in various aspects of research, and are well on their way to becoming competent researchers in their own rights. Both are currently applying for post-graduate studies at the University of Ghana. No post-graduate training was funded, however, throughout the course of the Accra Urban Food and

Nutrition Study (of which the urban agriculture study was one component), many people were trained for various jobs. One person was trained to be in charge of the data entry/systems analysis, and he is still working for Noguchi Memorial Institute as an independent consultant in this area. Six persons were trained as anthropometrists, seven as field supervisors for the survey, and some 20 trained as enumerators. Of these, a number have found similar jobs on other research projects after leaving AUFNS.

2. Institutional capacity strengthening. As a result of the overall study, the research capabilities of the Nutrition Unit of the Noguchi Memorial Institute for Medical Research has been expanded to include a variety of field methodologies, with specific emphasis on PRA methodologies and survey data collection. At the institutional level, the whole institute's data management and analysis capacity has been strengthened immensely. This was not only the result of the urban agriculture component of the study, but the main study as well. There is also stronger capacity for inter-disciplinary research, for collaborative work with other research and policy agencies, and continued work with other units within NMIMR. There are stronger links with policy making bodies in Ghana, and stronger linkages with donor organizations, all as a result of the AUFNS study.

3. Local partnerships. This has been a particularly strong-point of the overall study, and especially of the urban agriculture component. The urban and peri-urban agriculture component of the study included partnerships with the Accra Metropolitan Assembly; The Tema Municipal Assembly; the Lands Commission; The Ga District Assembly (the peri-urban district to the north of the main urban center, where much of the urban sprawl is taking place); The Ministry of Food and Agriculture (particularly the Women in Agricultural



Development Programme); The Accra Sustainable Cities Programme (which is responsible for environmental planning in the Greater Accra Metropolitan Area); CENCOSAD (the Centre for Community Studies, Action and Development, a Ghanaian NGO with long experience working in the low income areas of Accra); May Day Rural Project (a Ghanaian NGO that is working in the peri-urban districts of Ga and South Akwapim), The La Farmers Association; The Accra Vegetable Growers Association; the Greater Accra Poultry Farmer=s Association; the Departments of Agricultural Economics, Plant Science, and Geography at the University of Ghana; the Animal Research Institute; and the Bacteriology Unit of NMIMR. The overall study included a somewhat expanded list, even beyond these. These partnerships enhanced the analytical ability of the study, made the list of research topics undertaken more relevant, and created a constituency to receive the findings of the study.

Several of these organizations are in an excellent position to take up the results of the study, and implement both policy changes, and programmatic interventions based on the study. In particular, the Accra Metropolitan Authority, the Accra Sustainable Cities Project, the various Farmer=s Associations, CENCOSAD, and especially the Lands Commission, are in excellent position to make use of the findings of this study. Many, many more organizations participated in the final presentation of results of the AUFNS.

4. Gender analysis. Somewhat contrary to expectations, farming in Accra turned out to be mainly a male occupation. This made for substantially more field work, because we wanted to be sure that we were not getting biased results. It may also be one of the reasons for a limited association of urban agriculture with food security and nutritional outcomes.

Although, the role of women, and intra-household dynamics did not turn out to be a major determinant of participation in urban agriculture, female-headed households, and certain occupational categories that are dominated by women (especially petty trade and street food vending) are among the most vulnerable groups in the AUFNS sample, and are one of the main groups emphasized for intervention in the main AUFNS report.

5. Multi-disciplinary approach. The topic of urban agriculture is an inherently interdisciplinary one. The study team included a nutritionist, several social scientists, a land economist, an agricultural economist, a bacteriologist, agricultural extension workers, farmers, city planners, environmentalists, and municipal officials. The multi-disciplinary analysis of the study's main report are the result. The study encompasses a holistic view of urban agriculture including: the factors that lead to participation in the agricultural livelihoods in the urban and peri-urban area; the threats to those livelihoods; the impact of the practice of urban agriculture on the urban environment; the impact of the practice of urban agriculture on the household food security and nutritional status of pre-school aged children; and the impact of production under urban conditions on food contamination, compared with other sources of food contamination.

6. Scientific advances and results utilization. This project was a research study, which has only recently been completed. While a good network has been put in place to digest the results of the study, it is too early to discuss results utilization. Also, the major hypothesis of the study—that of a strong association between urban agriculture and food security/nutrition—was rejected, and therefore a major intended policy outcome did not turn out as expected.

This in effect means focusing the major post-study policy attention more in the area of peri-urban livelihoods, not urban food and nutrition security.

Leverage of non-Centre funds. This study had financial support from a number of donors, including, in addition to IDRC, the Rockefeller Foundation, the World Health Organization, the Canadian International Development Agency, and the International Food Policy Research Institute. Although the grant raised from IDRC was the last major grant received by the study, each of the grants enabled the study to take a more comprehensive look at the overall situation of livelihoods, food and nutrition security in the Greater Accra area. Total funds raised for the overall AUFNS are as follows:

| <b>DONORS</b>                                | <b>AMOUNT US\$</b> |
|--|--------------------|
| World Health Organization                    | 60,000.00          |
| Rockefeller Foundation                       | 80,000.00          |
| International Food Policy Research Institute | 50,000.00          |
| International Development Research Centre    | 30,000.00          |
| Canadian International Development Agency    | 2,650.00           |
| <b>TOTAL</b>                                 | <b>222,650.00</b>  |

8. Other Impacts. The study had at least two other unique impacts: the collaboration with the Lands Commission, and the participatory stakeholders= approach utilized to plan, develop, and disseminate findings of the study.

a) The collaboration with the Lands Commission was unique in that at the time of the study on peri-urban land rights and changes in livelihoods, a new national land policy formulation exercise was in progress, in which the collaborative researcher was directly involved as a chief government technical officer. The policy document addresses some of the problems identified in this study. This is a major, cabinet-level initiative on a thorny development issue in Ghana, and peri-urban land issues are one of the major concerns, since that is where competition for land is stiffest, and where conflict over land is the most rampant. The development of a land use policy and guidelines for dealing with land tenure transformation in peri-urban areas are major contributions of the study. This study also brought to light several other key issues including emergent landlessness on the peri-urban periphery, and the impact on both indigenous and stranger communities living there.

b) The entire AUFNS study relied heavily on a participatory, stake-holders' process to help guide the study. A round table workshop/seminar was held at the outset of the study that was attended by some fifty people from the research community, national, local and municipal government, donors and development agencies, NGOs, and urban community groups (it was that round table that suggested the need to include an urban agriculture component in the study). The urban agriculture component of the study held its own planning workshop, to which were invited as many stakeholders in urban agriculture as possible, including, again, the metropolitan and peri-urban district authorities; farmer=s associations; officials from the ministries of Food and Agriculture, and Local Government; the Town and Country Planning Office and Accra Sustainable Cities Project; the Environmental Protection Agency, NGOs and CBOs, and the research community.

The study concluded with a one-day national seminar to present the results of the entire AUFNS study, including the major findings of the urban agriculture component. Some 100 people attended from all the above mentioned stakeholders, as well as numerous community leaders, elected assembly members, and individual women who had participated in the study in one way or another. Follow-up meetings were held in each of the sixteen enumeration areas where the AUFNS survey had been carried out, to give some feedback to participants, leaders, and other members of the community on the major findings of the study, and the implications for their own neighborhoods or their individual livelihoods. Lastly, private meetings were held with a number of influential policy makers, to solicit their inputs to the recommendations of the study, and thereby hopefully helping recommendations to be implemented by the key players in the policy -making and program-planning arenas in the city.

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## **Urban Livelihoods, Food and Nutrition Security in Greater Accra**

### **Background and Introduction to the Study**

#### **Background to Study**

To date, relatively little attention has been paid to the questions of urban poverty, food insecurity and malnutrition, which have all been viewed as predominantly rural problems. But rapid urban growth, and an increase in urban poverty have forced policy makers, program planners, and activists to take another look at urban problems. Yet, to date, specific policies or programs to deal with urban food insecurity and malnutrition are few.

Urban life affects all the major determinants of food security and nutritional status: urban livelihoods are different, and characterized by dependence of cash income, and a high proportion of women working away from the household; urban diets are different from rural diets; and environmental conditions, sanitation, levels of crowding, and health may also be different in cities.

Structural Adjustment is widely believed to have had a negative impact on urban populations: including increased prices, lower wages, redeployment and the loss of jobs, and cutting social expenditures on public welfare. Evidence on these questions is mixed, but there is little question that more and more urban workers are able to find employment or self-employment only in the informal economy, where incomes are low, jobs are unprotected, and formal safety nets virtually non-existent.

Nearly 40% of the population of Sub-Saharan Africa now lives in cities<sup>C</sup> by early in the 21<sup>st</sup> Century the urban population is expected to pass the 50% figure. The recently published West Africa Long-Term Perspectives Report (OECD, 1995) notes that population in the region will double by 2020, and two thirds of this growth will take place in cities. Social inequalities will increase, <sup>A</sup>nowhere more so than in the large cities.<sup>@</sup>

Greater Accra is growing at 4.7% per year. The population is now about 2.4 million. By 2020, the population will be 5.5 million.

Between 1988 and 1993, poverty in Accra rose from 8.5% to 23.0%. This increase in poverty in Accra took place at a time when poverty declined in the rest of Ghana. Levels of poverty are still higher in rural areas, but generally declining. In Accra, the level of poverty is increasing, apparently rather rapidly. In a city where a high proportion of the household budget is devoted to purchasing food, poverty is manifested as food insecurity.

To understand these trends, and the forces causing them, the Accra Urban Food and Nutrition Study was a two-year research project, with the objectives of



understanding the linkages of livelihoods, income, women=s work to food security and nutrition; to understand urban coping strategies, and to outline policy and programmatic alternatives to address urban poverty, food insecurity, and malnutrition.

The study used combined conceptual frameworks for livelihoods security, and for child nutritional status. Livelihoods consist of Athe capabilities, activities and assets required to earn an adequate income.@ Child nutritional status is determined by food intake, health, and careC and income affects all three of these.

### ***Introduction/Description of Sample***

The study consisted of participatory community studies, household case studies, a household survey, and follow up interviews and focus groups. The sixteen enumeration areas of the survey constituted a representative sample of Greater Accra, with households including a child under the age of three years as the primary unit of analysis (n=559). All households selected into the sample had a child under age three.

The overall sex ratio in the sample is 76 males to 100 females. Female headed households constitute 35% of the sample, and the sex ratio in those households is even more skewed towards females. Among children under age three, the ratio is even.

Male-headed households tend to be larger (5.2 persons) than female-headed households (4.8) persons. Male heads tend to be better educated (12.2 years) than female heads (7.5 years). And the dependency ratio (ration of non-working age to working age members) is higher in female-headed households (1.5:1) than in male-headed households (1.1:1). The overall dependency ratio is 1.2:1, meaning 120 people dependents for every 100 working-age people.

Over 40% of the total live in family compound houses, particularly in the indigenous communities, and particularly female-headed households.

80% of primary care-givers for children under three years of age are their biological mothers. Others include grandmothers, other relatives, and in a few cases, fathers. 64% of all primary care-givers had basic education. Two-thirds of primary care-givers are married and the only wife; 11% are in polygamous unions; 16% are not married. In terms of ethnic origin, 35% are Ga-Adangbe; 27% are Akan; 24% are Ewe; and 13% are other migrants, mainly from the North of Ghana.

10% of households in Accra own the house in which they live; 47% rent; 39% live in family houses and mostly do not pay rent. Toilet facilities are mainly public

latrines (54%), 20% use private KVIP latrines; 16% do not use any particular toilet facility; few have flush toilets. Hygiene in public toilets was poor throughout the city.

Water comes from vendors in 54% of Accra households; 38% use public taps, and 7% have piped water in their houses. The cost of a bucket of water in February-March, 1997 varied from 420 to 4200, with the cost inevitably being higher in low-income neighbourhoods.

Most households dispose of rubbish by public dumping, or indiscriminate dumping, and waste removal is haphazard in over half the communities surveyed.

## **II. Urban and Peri-Urban Livelihoods**

### **A. *Urban Livelihoods***

Livelihood strategies in Accra are predominantly production and exchange based. Labor is the most important asset to urban dwellers, and labor-based income generating activities are the most important source of income in the sample, especially among low income groups. Inter-household transfers of money and goods are very important, especially for low income households, and for female-headed households.

Individual unemployment is relatively low in the sample, but most people are engaged in unprotected wage labor jobs, and self-employed activities that offer little job security and legal protection. Almost 18 percent of all individuals over 10 years old are actively seeking work but unable to find any or to start some form of self employment. Six percent of all households have no employed or self-employed member.

Of those employed, most are in the informal sector. The ratio of informal/ formal workers in the Accra sample is roughly 7:1, compared to the ratio of 5:1 in 1990 and 2:1 in 1980.

There are significant differences in the major employment activities of men and women. For individuals, women's income-generating activities are heavily concentrated in petty trading, and preparation and sales of street food. More than two-thirds of women's primary income-generating strategies fall in these two categories. Over 60 percent of men's primary income-generating strategies involves wage labor, whereas over 75 percent of women's primary strategies involves self-employment. Men are three times likely to have a protected wage (civil service or large firm) job as women. However men and women are equally likely to be engaged in some kind of productive self employment.

At the household level, there are differences between the number of income-generating activities and the level and source of income between female and male headed households. Female-headed households were most likely to have no members engaged in any income-generating activity. In these households the main source of

income is through remittances, not through labor. The complete reliance on remittance income makes these households vulnerable.

Female headed households have a significantly lower number of income-generating activities than male-headed households and a lower number of income generating activities per household member. The extent of labor utilization is low in female-headed households. Household structure is different in female headed households: Total labor resources are fewer in female headed households; households tend to be smaller; the age of the female heads is younger; and the dependency ratio is higher for these households. Average monthly income is significantly higher for male headed households. Female headed households tend to rely more on inter-household transfers.

- C Overall, inter-household transfers make up 20% of household income, and in female-headed households, the figure is over 40% of income. The majority of this money is used for consumption purposes. The flow of these transfers tends to be from husbands to wives, from parents to children, and much of the exchange is limited to the urban area, although recently-arrived migrants tend to remit to their homes outside the city.
- C Income diversification is an important strategy to reduce risk in the urban income environment. Individuals diversify income by working more than one job at a given time or moving between different jobs over time. Households diversify income by relying on multiple income earners within the household and obtaining income from both earned and unearned sources, such as from rents, pensions, remittances, sales of goods, gifts and borrowing.
- C Individuals are not likely to hold more than 2 income generating activities at once. Over the course of a year, a given individual may engage in multiple activities. The managing of multiple income-generating activities at different times of the year is more common among young, single men.
- C Households diversify their total income through a combination of family labor and exchange based activities. Individuals within a single household are employed in different sectors of the urban economy, contributing to a diversified household income portfolio. Two-thirds of the households in the sample have two or more income-generating activities in which members have engaged in the 30 days prior to being interviewed.
- C In 75 percent of all households, at least one of the income generating labor-based activities is under the direct control of women. Women are either the main income earners or supplementing the head of the household=s main source of income.
- C Income diversification is a strategy used by households across all income levels. Households with the lowest income (those relying primarily on unskilled labor and petty trading) have the least diversified income portfolios. Better off households are

more likely to earn income from multiple sources than poorer households. Poor households with low skill and education levels face limited employment opportunities and find it difficult to initiate other income generating activities. Higher educations are significantly and positively associated with higher per capita incomes.

- C Both total and per capita income rise with increased number of income generating activities per household.

### ***B. Peri-Urban Livelihoods***

- C Prior to urbanization, peri-urban areas provided good agricultural lands, supplied foodstuffs to the urban market, and provided stable livelihoods for the inhabitants. This stable economy has been disturbed by rapid urban expansion and sprawl.
- C In some places the population displaced out of agriculture by urbanization is absorbed into industrial or commercial activities in the urban area. However, this is not how the situation in peri-urban Accra is characterized.
- C Planning for agriculture is not a practice of urban land use planning in Ghana. No attempt is therefore made by policy makers and urban planners to protect farming lands in the expansion of the city.
- C The impact of urbanization on land use, property rights, and livelihoods is highly variable. The fate of any given community in the process of urbanization depends on local leadership and the commitment of the leadership to the development of the local community.
- C Due to rapid urbanization farm land is being rapidly lost. This may be because of the expansion of land used for housing, or it may be due to environmental destruction in the form of sand winning, stone quarrying, or simply removal of top soil for landscaping. In each case, local residents lose their agricultural livelihoods and become worse off. In some areas, where agriculture has been able to rapidly commercialize, however, access to urban markets has increased income in the community, and led to a higher standard of living. In a few cases, land has been deliberately protected for agricultural use.
- C Tenure transformation in the peri-urban areas of Accra has created hardships, especially for strangers, and the non-land owning families. Men and women alike lose usufructuary rights, but women have fewer alternative livelihoods outside agriculture, and therefore more vulnerable to impoverishment.
- C The customary system of land ownership, the process of commodification of property rights, and the use of and accountability over the proceeds from sale of land affects the ability of people to maintain a livelihood in farming. There is thus a link between tenure change, loss of farmland, and loss of livelihoods, with women and strangers the most affected.

### III. Food Availability, Food and Nutritional Security

#### 1. Food Availability

- C Mean total household expenditures for the Accra households was estimated at 41,028,200.00 per person per year (equivalent to \$US 390, the national average income reported by the World Bank's World Development Report 1997).
- C Food is still the single most important commodity in the urban consumer's basket of goods and services. Overall, the average urban Ghanaian household spends 55 percent of total household expenditures on food. Eighteen percent spend more than 70 percent of their budget on food.
- C The food budget share varies by income levels, occupation groups and sex of the head of the household. The mean budget share spent for food for the lowest 20 percent is 61 percent, compared to 41 percent for the households with income in the highest 20 percent. Street food vendors spend 67 percent of their total expenditures on food for own consumption, while professionals spend only 44 percent. Female-headed households spend 60 percent of their budget on food, compared to 52 percent in male-headed households.
- C Urban food consumption patterns in Accra are characterized by a high dependence on purchased food commodities. For the entire sample, 90 percent of total consumption comes from purchases, indicating a strong reliance on the market to meet food needs.
- C A substantial share of food comes from foods purchased away from home. Accra households spend one-third of their food budget on street foods and meals prepared away from home. The lowest income group spends almost 40 percent; female-headed households spend 36 percent; petty traders spend 33 percent; the unemployed 37 percent, and street food vendors 42 percent.
- C Gifts and transfers play an important role in meeting household consumption needs for female headed households and indigenous households, accounting for 9 percent of the total budget for each group. The unemployed obtain 14 percent of total food outlays from gifts and transfers.
- C The mean household calorie availability per adult equivalent unit (aeu) for the entire sample is 2640 kcal/aeu/day. Calorie availability increases with income.
- C The mean price per 1000 calories is 746 cedis, which is equivalent to \$U.S. 0.39. At this price, it would cost 2,100 cedis to obtain the minimum caloric requirement for one adult equivalent. The minimum wage during the survey was 2,000 cedis per day.
- C Although female-headed households have lower mean incomes than male headed households, their food budget shares and calorie availability are significantly higher

than male-headed households.

- C Urban consumption patterns are diversified. Expenditures on bulk staple food items, such as maize, rice, cassava and yams, do not dominate the total diet. More of the budget is allocated to complimentary food groups, such as meat and fish, vegetables, fats and oils and dairy products and eggs. However, in terms of calories, staple foods account for the largest share of total calories available to the households. In fact, a large share of total staple food consumption is being met through prepared food and meals purchased away from home.
- C Urban consumers obtain most of their staple diet from maize, cassava, and rice. Maize accounts for 33 percent; cassava accounts for 24 percent; and rice accounts for 19 percent of all staple foods consumed.
- C Urban food consumption patterns have shifted toward foods that are easier to prepare and cook, especially among higher income households. Wealthier households are substituting rice, wheat and yam for cheaper staple foods, such as maize and cassava.
- C Low income households consume both a larger percent of total calories from staple foods and a larger share from foods purchased away from the home than wealthier households. Purchasing food and meals away from home contributes to already high budget shares, since these foods tend to be more expensive than foods prepared at home. The mean calorie price per 1000 kcal was 4422 for grains and 4 292 for roots and tubers, compared to 4850 for prepared staple foods (*kenkey, banku, fufu, or konkonte*) and 41050 for prepared meals.

## ***B. Food and Nutrition Security***

- C 40 percent of households have inadequate calorie availability
- C Combining caloric adequacy with food share of household budget reveals that 20.6 percent of Accra households are food secure (adequate caloric availability, low food shares; 23.6 percent are food insecure (inadequate caloric availability, high food shares; 39.2 percent are vulnerable to price or income shocks (adequate caloric availability in short term, but high food shares); 16.6 percent are of questionable status (inadequate caloric availability, low food shares).
- C Although calorie available is mostly adequate, a high proportion of female-headed households are in the vulnerable group; and Afemale@ occupation groups (petty trading and street food vending) are also in that group. Street food vendors and unskilled laborers have the highest levels of food insecurity.
- C When food or money to acquire food is insufficient, Accra residents engage in a variety of coping strategies including dietary change, strategies to increase the amount of food available in the short term, and rationing strategies.

- C Food insecurity is not only a function of income, but it is associated with the type of employment and household structure. The largest number of food insecure households are found among the lowest income groups. Female-headed households tend to have higher levels of caloric adequacy, but expend greater proportions of their budget to acquire food, so female-headed households, and those occupational groups that are predominantly female (petty trading and street food vending) have the highest levels of vulnerability to food price rises or income shocks. Overall, roughly one-fourth of the sample is classified as food insecure; about two fifths fall into the vulnerable group. The means of coping with food insecurity varies considerably.
- C Among children 3-36 months old (of which AUFNS is a statistically representative sample) the mean height-for-age Z-Score is -0.94; weight-for-age is -1.05; weight for height is -0.57 (or roughly one standard deviation below the median expected weight and height for age, and half a standard deviation below the expected weight for height).
- C The prevalence of stunting (low height for age) is 17.6 percent. The prevalence of wasting (low weight for height) is 5.3 percent.
- C Growth faltering begins 3-6 months after birth, and is generally the most severe between one and two years of age, after which there is some improvement.
- C Among mothers, 15.7 percent are underweight, 47.8 percent are in the normal range, and 36.5 percent are overweight (25.2 percent are obese).
- C In comparison with earlier nutritional data on Accra, the period of 1988 to 1993 saw generally improved child nutritional status, but the period from 1993 to 1997 has seen a deterioration in nutritional status, including a significant decline in mean height for age, which is generally taken as the best indicator of long-term human welfare.
- C Major determinants of child height for age (nutritional status) include the age of the child, the care the child receives, the health of the child, and the height of the mother. The effect of income on child nutritional status is expressed through calorie availability, and access to health care.

#### **IV. Health, Nutritional Status and Household Caring Capacity**

##### ***A. Health***

- C The three most prevalent childhood disease conditions are respiratory infections (46% of children had symptoms in past two weeks); fever (37%) and diarrhoea (31%). Of all morbidity symptoms studied, only fever is related to nutritional status.
- C Overall child health was evaluated using a Visual Analog Score, which is the primary care-giver's assessment of the overall health of her child, compared to other children, with a potential range of 0 - 100. The mean child health score was 71.3, but the

distribution was skewed to the right, indicating that a majority of mothers considered their children to be healthier than other children. The Visual Analog Scores were correlated with morbidity symptoms, and were significantly associated with all the nutritional status indicators.

- C In general, child health deteriorates from about 3-6 months after birth to about 21 months of age, after which it begins to improve again.
- C Maternal behavior is very important to child health. 97% of all primary care-givers attended pre-natal care almost half during the first trimester, and most of the remainder during the second. However, of 35 severely malnourished children (WHZ <-3.00), none had been taken to the nutritional rehabilitation clinic.
- C During the month preceding the survey, 64% of children had been taken for growth monitoring. 85% of children had their third DPT immunization and 68% had their measles vaccination.
- C All health and nutrition outcomes were found to have much greater variability within a neighbourhood or enumeration area than between enumeration areas. This means that there is little spatial homogeneity in human welfare outcomes.

## **B. Caring Capacity**

- C The nutrition, healthy growth and development of infants and young children depend not only on sufficient food but also on adequate health care and appropriate caring behaviours. Especially in the conditions of poverty, food insecurity and the deteriorating environment described for Accra, coupled with a significant proportion of women (who are the primary care givers in the household) needing to generate income in addition to their other responsibilities, enhanced care-giving within the household can optimize existing resources to produce good health and nutrition in young children.
- C Caring capacity is dependent on the availability of resources or an absence of constraints, within the household and the wider community, that will facilitate the translation of knowledge into practice. The resources and constraints to care-giving examined in the study are household wealth and social status and primary care-giver education, health status, work and employment and access to alternate care and social support. Care-giving behaviours studied are breast/complementary feeding, health seeking and hygiene behaviours as they relate to the index child.
- C The Accra sample is predominantly low-income and the majority of households lack the basic amenities that ensure quality care-giving; household socio-economic status, assessed by an index incorporating asset ownership (consumer durable items) and housing quality (including water and sanitary facilities) was significantly and positively associated with child health and nutritional status.



- C Primary care-giver educational status was significantly and positively related to index child nutritional status and diarrhoea but not general child health.
- C 55% of primary care-givers were in full-time employment and 57% of working primary care-givers worked and provided childcare simultaneously. Only 28% of children who had alternate care were in creches; most had one alternate carer. Primary care-giver full-time employment and longer hours of work were associated with poorer child nutritional status; this association is rather complex as full-time employment appeared to coincide with the age when children are in most need of care. More importantly, though, children whose care-givers worked in the markets and on the streets (majority of women are in this category) had the worst nutritional status.
- C Provision of financial support from the father (78% of fathers provided support), regardless of their residential status, was associated with better child nutritional status whilst primary care-giver marital status (67% of primary care-givers were in monogamous marriages) was associated with better child health.
- C Feeding behaviours were less than desirable as current recommendations are not being followed; breastfeeding is universal, but pre-lacteal feeding and early supplementation are highly prevalent across primary care-giver educational levels. Only 19% of babies were breastfed within an hour of birth and 25% more than 24 hours after birth. 32% of mothers gave various pre-lacteal feeds. The majority of mothers gave a variety of liquids and complementary foods during the first 4 months; these included water and sugar solutions (75%), milk or infant formula (37%), weaning foods (56%), the most popular being fermented maize porridge or koko (67%). Pre-lacteal feeding was associated with long-term poorer nutritional status whilst supplementation before 4 months was associated with poorer health status.
- C Health seeking behaviours relating to growth monitoring and immunization appeared to be satisfactory across primary care-giver educational levels; the overwhelming majority of mothers attended pre-natal clinic and most children had been attending clinic for growth monitoring and immunizations. Growth monitoring was associated with better nutritional status.
- C Hygiene behaviour, assessed by spot observations of specific practices, was also generally satisfactory; on a scale of 0 to 6, 30% of households had 0 to 3 good practices, 40% had 4 or 5 good practices whilst the remainder had 6 good practices. Good hygiene behaviour was associated with better nutritional status and health and lower diarrhoea incidence.
- C More care resources (primary care-giver education, household socio-economic index and expenditure quintile) were associated with hygiene behaviour. However, only primary care-giver education significantly correlated to general caring capacity, as reflected by a derived care index relating to feeding and health seeking behaviours.

## V. Policy Implications of the Study

- C With the rapid pace of urban population growth, and the increase in urban poverty, the problems identified by this study are likely to intensify over the next two decades. While the situation in Accra outlined here does not constitute a crisis or emergency, it is a long-term developing situation that requires increased attention from policy makers and program planners. Rural poverty and rural food crises may be more pressing problems at the moment, but trends indicate that the rural/urban gap is closing. In general, severe child malnutrition is not the major problem in the metropolitan area, and greater expenditure on nutritional rehabilitation is not necessarily the solution. Rather, longer-term efforts to reduce mild to moderate malnutrition is the primary recommendation of this study. This relies on indirect means, such as improving the capacity of vulnerable groups to improve their income earning ability, recognizing the special needs of working mothers, and putting in place simple systems that will identify those in special need of assistance.
- C The urban context is characterized by many actors, interest groups and stakeholders: There is an urgent need for a central body or Roundtable@ where policy issues can be raised, initiatives discussed and coordinated, so that activities are not carried out in isolation or ignorance of other initiatives.
- C Vulnerable groups identified by the study include very low income group (roughly one fourth of all households in the city; female-headed households; large households with few working members; working women with children below the age of two years; individuals with low education or few salable skills; street children; and certain livelihood groups, including the unemployed, farmers in the peri-urban area, petty traders (particularly those in the central business district who are subject to occasional harassment), women market porters, and unskilled laborers. Where an individual, especially a household head, falls into more than one of these categories, vulnerability is increased.
- C In terms of policy, employment and enhancing the possibilities for self-employment has to be the first priority for action at the level of the greater metropolitan area. This must embrace the attempts of low-income urban residents to diversify their incomes, to gain access to credit, to work in a regulatory environment that is not conducive to harassment by authorities, and where they are taxed at a fair rate. Employment should be encouraged as a criterion for investment in the city. Small entrepreneurs, especially women, should be able to have access to training programs both for technical and management skills, and should be able to get access to credit for productive purposes.
- C Female-headed households, with fewer labor resources, need training programs to enhance skills, or better access to credit to expand enterprises, or enter small-scale business. The answer is not to increase their labor resources within the household, but to expand their options through improved skills and access to better resources. Investments in human capital, including formal education as well as specific skills training, will provide long-term solutions to improved earning capacity of women.

- C The special needs of working mothers should be recognized. The increasing necessity of women in the household to generate a cash income in addition to other responsibilities is an important factor for determining food security and children's nutritional status. Women are forced to make trade-offs between income-generating and care roles. While legal reform can help in the formal sector (maternity leave, time allowed for child feeding), such a high proportion of working women in Accra are self-employed outside the formal sector that other approaches must be tried. Alternative forms of day care for small children, especially in the one-two year age group, is one such need.
- C Policy priority should be given to both the formal and informal education of women. In addition, education messages on child care and child welfare should be more focused and relevant: particularly those concerning exclusive breastfeeding for a minimum of four months (and six if possible), the avoidance of pre-lacteal feeding and the avoidance of water as a breast-milk substitute. These education messages need to be targeted to the health sector in general as much as to individual mothers.
- C The trend in substituting traditional staple foods such as maize and cassava toward rice and wheat has implications for policy makers concerned with trade-offs of relying on imported foods to meet growing urban demand and increasing the production of basic staple foods in Ghana. As income increases, urban consumers are shifting consumption to staple foods that are predominantly imported. Part of the changes in consumption patterns are the result of changing tastes and preferences associated with higher incomes, however, part of the shift is also among lower income households, where increased demands on women's time is associated with increased consumption of foods that are easier to prepare and cook. Continued research and development on processed foods derived from domestically produced foodstuffs—maize, yam, plantain and cassava—are important if Ghana's food production is expected to meet the majority of food needs in the years to come. Similarly, domestic rice production, processing and marketing will need to expand and improve rice quality, if it is to compete with imports.
- C Street foods are an important source of food for consumption, an important coping strategy, and an important livelihood for a large number of women in Accra. Households that cannot afford to buy more expensive staple foods such as rice and bread are still substituting between time and labor intensive foods prepared at home for street foods, including prepared staples and prepared meals, but these are expensive sources of calories. The higher food budget shares being spent on street foods may reduce the amount of money left for other foods, such as eggs, fish, meat, fruits and vegetables. Given that people are spending a large share of their incomes on street foods, efforts should be made to assist street food vendors and consumers of street foods. City authorities are concerned about a threat to public health because of food contamination in the street food vending sector. Promotion of a joint city/vendor association that would ensure food safety regulation, provision of cheaper and more nutritious snacks and meals, and assistance in providing a secure and clean environment for street food vendors to operate, would be good for both business and

public health.

- C In peri-urban areas, landlessness and loss of livelihood require pragmatic solutions from policy makers, including: a land use and housing policy for the peri-urban area based on economic and well as social and ecological criteria; an environmental policy with enforcement capacity on quarrying, sand winning and land reclamation; and compensation for those displaced out of agriculture. This compensation need not be in the form of cash, but also in skills retraining so that displaced farmers can enter other occupations, or in the form of access to credit and technology that will enable a more commercialized and intensified agriculture on less land.
- C Given the lack of spatial homogeneity in human welfare outcomes (including income, health and nutritional status of children, and child mortality) any approach to intervention will have to be based on a household targeting approach, not simple geographic area targeting. This calls for a simple kind of food/nutrition security monitoring system in the urban area, both for safety nets and for household-level interventions. The study developed a set of indicators that could be utilized for this purpose.